

## CLAIMS

What is claimed is:

- 5     1.     A method for making a run of cross-linked non-halogenated flame retardant polyolefin material, the method comprising the steps of:
- extruding molten non-halogenated flame retardant polyolefin material through a die that defines an elongated opening which is at least 7.5 centimeters wide;
- 10           cooling the extruded non-halogenated flame retardant polyolefin material so that the extruded non-halogenated flame retardant polyolefin material hardens into a sheet of non-halogenated flame retardant polyolefin material; and
- cross-linking the sheet of non-halogenated flame retardant polyolefin material.
- 15     2.     The method of claim 1 wherein the step of cross-linking includes the step of:
- applying an electron-beam to the sheet of non-halogenated flame retardant polyolefin material.
- 20     3.     The method of claim 1 wherein the step of cooling includes the step of:
- forming, as the sheet of non-halogenated flame retardant polyolefin material, a web having a width which is at least 40 centimeters wide.
4.     The method of claim 3, further comprising the step of:
- 25           winding the web onto a core which is at least 40 centimeters wide.

5. The method of claim 1, further comprising the step of:  
dividing the sheet of non-halogenated flame retardant polyolefin material  
lengthwise to form multiple feeds of non-halogenated flame retardant polyolefin  
material.

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6. The method of claim 5 wherein the step of dividing includes the step of:  
cutting the sheet of non-halogenated flame retardant polyolefin material  
lengthwise prior to the step of cross-linking such that the step of cross-linking the  
sheet of non-halogenated flame retardant polyolefin material involves  
cross-linking the multiple feeds of non-halogenated flame retardant polyolefin  
material.

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7. The method of claim 5 wherein the step of dividing includes the step of:  
cutting the sheet of non-halogenated flame retardant polyolefin material  
lengthwise after the step of cross-linking.

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8. The method of claim 5, further comprising the step of:  
concurrently winding the multiple feeds of non-halogenated flame  
retardant polyolefin material onto multiple cores.

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9. A system for making a run of cross-linked non-halogenated flame retardant polyolefin material, the system comprising:
- an extruder having a die that defines an elongated opening which is at least 7.5 centimeters wide, the extruder being configured to extrude molten non-halogenated flame retardant polyolefin material through the die;
- a cooling assembly coupled to the extruder, the cooling assembly being configured to cool the extruded non-halogenated flame retardant polyolefin material so that the extruded non-halogenated flame retardant polyolefin material hardens into a sheet of non-halogenated flame retardant polyolefin material; and
- a cross-linking assembly coupled to the cooling assembly, the cross-linking assembly being configured to cross-link the sheet of non-halogenated flame retardant polyolefin material.
10. The system of claim 9 wherein the cross-linking assembly includes an electron beam device which is configured to apply an electron-beam to the sheet of non-halogenated flame retardant polyolefin material.
11. The system of claim 9 wherein the cooling assembly includes a cooling device which is configured to form, as the sheet of non-halogenated flame retardant polyolefin material, a web having a width which is at least 40 centimeters wide.
12. The system of claim 11, further comprising:
- a winding assembly coupled to the cross-linking assembly, the winding assembly being configured to wind the web onto a core which is at least 40 centimeters wide.

13. The system of claim 9, further comprising:

a dividing assembly coupled to the cross-linking assembly, the dividing assembly being configured to divide the sheet of non-halogenated flame retardant polyolefin material lengthwise to form multiple feeds of non-halogenated flame retardant polyolefin material.

14. The system of claim 13 wherein the dividing assembly is disposed between the cooling assembly and the cross-linking assembly, and wherein the dividing assembly includes:

a set of cutters which is configured to cut the sheet of non-halogenated flame retardant polyolefin material lengthwise prior to cross-linking the sheet of non-halogenated flame retardant polyolefin material such that cross-linking the sheet of non-halogenated flame retardant polyolefin material involves cross-linking the multiple feeds of non-halogenated flame retardant polyolefin material.

15. The system of claim 13 wherein the dividing assembly includes:

a cutter which is configured to cut the sheet of non-halogenated flame retardant polyolefin material lengthwise after the sheet of non-halogenated flame retardant polyolefin material is cross-linked.

16. The system of claim 13, further comprising:

a winding assembly which is configured to concurrently wind the multiple feeds of non-halogenated flame retardant polyolefin material onto multiple cores.

17. A run of cross-linked non-halogenated flame retardant polyolefin material made by a method comprising the steps of:
- extruding molten non-halogenated flame retardant polyolefin material through a die that defines an elongated opening which is at least 7.5 centimeters wide;
- cooling the extruded non-halogenated flame retardant polyolefin material so that the extruded non-halogenated flame retardant polyolefin material hardens into a sheet of non-halogenated flame retardant polyolefin material; and
- cross-linking the sheet of non-halogenated flame retardant polyolefin material.
18. The run of cross-linked non-halogenated flame retardant polyolefin material of claim 17 wherein the step of cross-linking includes the step of:
- applying an electron-beam to the sheet of non-halogenated flame retardant polyolefin material.
19. The run of cross-linked non-halogenated flame retardant polyolefin material of claim 17 wherein the step of cooling includes the step of:
- forming, as the sheet of non-halogenated flame retardant polyolefin material, a web having a width which is at least 40 centimeters wide.
20. The run of cross-linked non-halogenated flame retardant polyolefin material of claim 19 wherein the method further comprises the step of:
- winding the web onto a core which is at least 40 centimeters wide.

21. The run of cross-linked non-halogenated flame retardant polyolefin material of claim 19 wherein the method further comprises the steps of:
- cutting the web into multiple feeds; and
  - concurrently winding the multiple feeds onto multiple cores such that one
- 5 of the concurrently wound multiple feed forms the run of cross-linked non-halogenated flame retardant polyolefin material.
22. A method for making a cable, the method comprising the steps of:
- providing a set of conductors;
- 10 providing at least one run of cross-linked non-halogenated flame retardant polyolefin material; and
- extruding a jacket around (i) the set of conductors and (ii) each run of cross-linked non-halogenated flame retardant polyolefin material to form the cable.
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23. The method of claim 22, further comprising the step of:
- positioning a run of cross-linked non-halogenated flame retardant polyolefin material between conductors of the set of conductors prior to the step of extruding.
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24. The method of claim 22, further comprising the steps of:
- creasing each run of cross-linked non-halogenated flame retardant polyolefin material; and
  - positioning each run of cross-linked non-halogenated flame retardant
- 25 polyolefin material between conductors of the set of conductors prior to the step of extruding.

25. The method of claim 22, further comprising the step of:  
wrapping a run of cross-linked non-halogenated flame retardant polyolefin material around the set of conductors prior to the step of extruding.

5 26. A system for making a cable, comprising:  
a conductor source which is configured to provide a set of conductors;  
a cross-linked non-halogenated flame retardant polyolefin material source  
which is configured to provide at least one run of cross-linked non-halogenated  
flame retardant polyolefin material; and  
10 an extruding assembly coupled to conductor source and the cross-linked  
non-halogenated flame retardant polyolefin material source, the extruding  
assembly being configured to extrude a jacket around the set of conductors and  
each run of cross-linked non-halogenated flame retardant polyolefin material to  
form the cable.

15 27. The system of claim 26, further comprising:  
a positioning assembly coupled to the cross-linking assembly, the  
positioning assembly being configured to position a run of cross-linked  
non-halogenated flame retardant polyolefin material between conductors of the set  
20 of conductors prior to extruding the jacket.

28. The system of claim 26, further comprising:

a creasing assembly coupled to the cross-linked non-halogenated flame retardant polyolefin material source, the creasing assembly being configured to crease each run of cross-linked non-halogenated flame retardant polyolefin material; and

a positioning assembly coupled to the creasing assembly and the conductor source, the positioning assembly being configured to position each run of cross-linked non-halogenated flame retardant polyolefin material between conductors of the set of conductors prior to extruding the jacket.

29. The system of claim 26, further comprising:

a wrapping assembly coupled to conductor source and the cross-linked non-halogenated flame retardant polyolefin material source, the wrapping assembly being configured to wrap a run of cross-linked non-halogenated flame retardant polyolefin material around the set of conductors prior to extruding the jacket.

30. A cable, comprising:

a set of conductors;

at least one run of cross-linked non-halogenated flame retardant polyolefin material; and

a jacket extruded around the set of conductors and each run of cross-linked non-halogenated flame retardant polyolefin material.

31. The cable of claim 30 wherein a run of cross-linked non-halogenated flame retardant polyolefin material is positioned to separate conductors of the set of conductors.
- 5 32. The cable of claim 30 wherein each run of cross-linked non-halogenated flame retardant polyolefin material (i) includes a crease along a midline of that run and (ii) is positioned to separate conductors of the set of conductors.
- 10 33. The cable of claim 30 wherein a run of cross-linked non-halogenated flame retardant polyolefin material wraps around the set of conductors.

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